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by

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The European corn borer, which has now assumed the role of "perennial pest" in South Dakota, has been conspicuous by its inactivity during the past few months. However, it is still the major pest of corn in our state. Since last fall the larvae (worms) have been spending their time in the "deep freeze" sleep of their kind of hibernation, hidden away in the snow-blanketed stalks of last years corn fields. This is nature's way of taking care of them during the winter, and all too many of the larvae are now becoming active again.

It is hoped that this year will be favorable for a good crop of corn, even though it is realized that a good corn year means a good corn borer year as well.

The question immediately arises, "What are the prospects for the coming growing season as far as corn borers are concerned?".

The studies conducted last fall indicate that in the southeastern counties of the state there is about as much corn borer breeding stock as there was in 1950. In the central eastern and northeastern counties there are more borers than there were in 1950. It must be remembered that last year was a poor year for development of the borers. As a consequence, the second generation of larvae, and most of the corn, was caught short of full growth by the early freeze which ruined the corn, thus reducing the additional damage done by borers to the point where it was of minor importance. Under conditions favorable for the production of corn last year the picture would have been entirely different.

There is enough corn borer breeding stock now in last year's cornfields to produce a serious infestation this year if weather conditions continue to be favorable. From observations made this spring it appears that the borers did not suffer any more than a normal winter mortality, which means that there was apparently from 80% to 90% survival.

As of the end of May approximately 10% to 15% of the overwintering borers have gone into the pupal stage.

Spring came to South Dakota at an early calendar date this year (1952). As a result, some farmers planted corn in late April. Many had planted their corn by the end of the first week in May.

From the standpoint of reducing the injury done to corn by the borer, this early planting is not a good practice. If corn borer infestation follows the

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1951 Experiments

County	Number and Kind of Treatments	Average Yield in Bushels per Acre	Average bushels per Acre saved by Spraying
Yankton	One; DDT Spray	69.559	
	Untreated check	60.669	8.890
Moody	One; DDT Spray on 7/26/51	37.222	
	Untreated check	29.347	7.875
	One, DDT Spray on 7/28/51 fall plowing - fertilizer	34.055	
	Untreated check	24.342	9.713
	One; DDT Spray on 7/26/51	34.30	
	Untreated check	25.46	8.84
	One; 5% DDT Dust on 7/28/51	33.827	
	Untreated check	26.844	6.983
	One; 10% DDT Dust on 7/28/51	38.850	
	Untreated check	34.037	4.813
	One; Ryania Dust on 7/28/51	34.475	
	Untreated check	30.493	3.982

In the Moody County experiments the DDT spray was applied at the rate of 1½ pounds of technical DDT per acre in 35 gallons of water emulsion. Two varieties of hybrid corn were used. The 5% DDT dust was applied at the rate of 40 pounds of dust (2 pounds of technical DDT) per acre; the 10% DDT at 20 pounds of dust (2 pounds of technical DDT) per acre. An attempt was made to apply the Ryania dust at the rate of 16 pounds per acre but considerable difficulty was experienced in getting the dust to go through the machine in a satisfactory manner.

It is of importance to note that even with the poorest control of corn borers the cost of treatment was more than returned to the farmer by the increased yield obtained. Chemical treatment for control of European corn borer, if justified by the infestation present, DOES pay.

Trend of European Corn Borer Populations in South Dakota

The European corn borer became an economically important pest in South Dakota in 1948. (It was found in the state first in 1946.) The following tabulation of the results of corn borer abundance studies conducted each fall shows how the numbers of borers present have varied during the last four years. The four-year figures are given only for the heavier infested counties.

County	Borers present, but no abundance survey in 1951	New Counties Found Infested in 1951	% or stalks infested To nearest whole number				Borers per 100 plants To nearest whole number			
			1948	1949	1950	1951	1948	1949	1950	1951
Armstrong										
Aurora	x									
Beadle			.05			55	13			107
Bennett	x	x								
Bon Homme			6		90	88	34		184	297
Brookings			6	74	57	66	3	194	83	364
Brown						45				188
Brule	x		.05				3			
Buffalo	x									
Butte	x									
Campbell	x									
Charles Mix	x		1				19			
Clark						43				38
Clay			16	98	94	82	153	600	530	472
Codington						31				48
Corson										
Custer										
Davison	x		2				36			
Day						40				83
Deuel			2	55		29	2	57		43
Dewey										
Douglas	x									
Edmunds	x									
Fall River										
Faulk	x									
Grant					51	40			77	133
Gregory	x									
Haakon	x	x								
Hamlin			8	55		56	5	57		160
Hand	x									
Hanson			3	73		46	20	154		85
Harding										

County	Borers present, but no abundance survey in 1951	New counties found infested in 1951	% of stalks infested To nearest whole number				Borers per 100 plants To nearest whole number			
			1948	1949	1950	1951	1948	1949	1950	1951
Hughes	x									
Hutchinson			6		82	70	32		176	298
Hyde	x									
Jackson	x	x								
Jerauld	x									
Jones										
Kingsbury			2	55	37	60	12	83	65	127
Lake			7	59	59	66	66	104	160	169
Lawrence										
Lincoln			15	97	83	81	365	640	391	541
Lyman	x									
Marshall						70				353
McCook			4	73	58	51	37	154	171	124
McPherson	x									
Meade										
Mellette	x	x								
Miner			2	59	58	53	8	104	171	59
Minnehaha			4	86	74	70	114	750	204	270
Moody			4	82	58	77	58	317	117	299
Pennington	x	x								
Perkins										
Potter	x									
Roberts					40	59			52	160
Sanborn	x		4				20			
Shannon										
Spink						55				121
Stanley	x	x								
Sully	x									
Todd	x	x								
Tripp	x									
Turner			15	97	89	85	99	640	415	324
Union			20	98	91	62	177	600	314	200
Walworth	x									
Washabaugh	x	x								
Washington										
Yankton			10	97	91	90	78	487	404	280
Ziebach										

The eastern quarter of South Dakota is divided into three geographic areas for purposes of corn borer study. The following graph (Figure 1) illustrates the fluctuations of European corn borer populations in these three areas during the past four years.

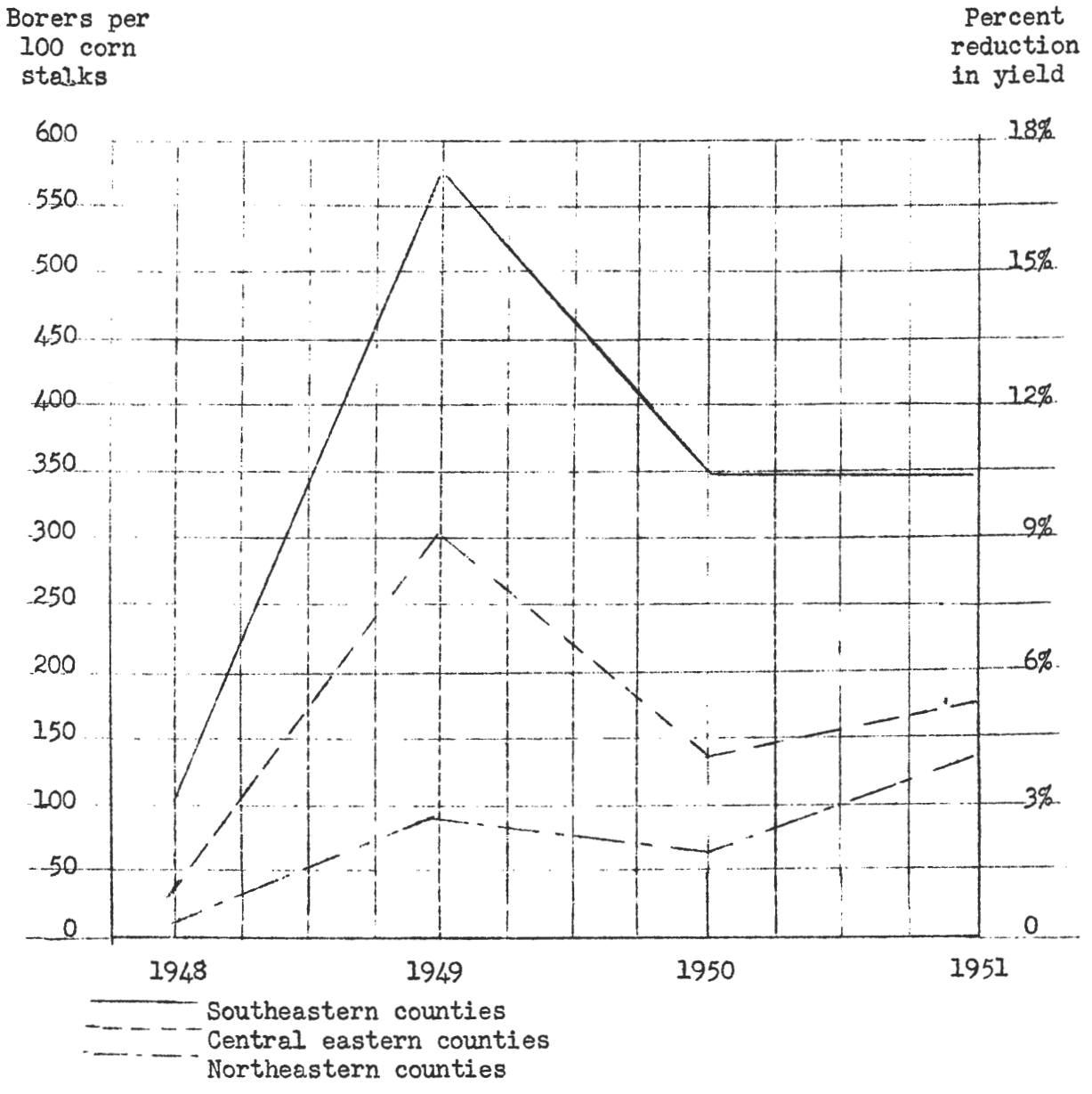

Figure 1. - South Dakota European Corn Borer Abundance Studies Based on Fall Population Figures.

The average farmer, by referring to his county figures in the preceding table and applying them to the graph on the basis of the number of borers per 100 corn stalks (left side of graph) can figure out his own estimated percent reduction in yield (right side of graph). By using the percentage figure thus obtained and multiplying it times his normal yield of corn per acre, at the present price of corn, he can figure how much the corn borer has cost him per acre of corn raised. He should be sure to use the normal yield of corn, before the corn borer became a problem in South Dakota, since if borers were present in his fields the yield actually received was the normal yield minus the loss caused by borers at the rate indicated in the graph.

Farmers are cautioned to remember suggestions for reducing loss caused by the European corn borer:

1. Corn should not be planted too early. Plant at midseason. Early planted corn fields suffer the heaviest infestation from first generation borers; late planted fields suffer most from second generation larvae.

2. If corn is (or was) planted early then those particular fields should be watched closely for egg deposition during the flight of corn borer moths.

3. Corn varieties which are adapted and proven good for the various localities should be used.

4. DDT spray or dust should be used as recommended if the infestation of corn borer eggs in a field is high enough to justify chemical control.

5. Consult the County Extension Agent or the Entomology Department, Experiment Station, South Dakota State College, Brookings, for latest recommendations.

6. The newspapers and radio will carry periodic news releases on developmental progress of the corn borer to aid in the fight against the pest.